MAJOR: CHEMISTRY
DEGREE: BACHELOR OF SCIENCE

Do science and math get you fired up? If someone says “Bunsen,” do respond with “burner?” If you do, and you’re fascinated by the idea of creating and characterizing new compounds or researching new drugs to cure disease, look no further. At CMU, you’ll get your goggles on and nurture your inner chemist with opportunities for hands-on, undergraduate research. Our chemistry programs are certified by the American Chemical Society.

<table>
<thead>
<tr>
<th>Macomb Community College</th>
<th>Credits</th>
<th>Central Michigan University Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1180 Communications I OR ENGL 1210 Composition I</td>
<td>4 or 3</td>
<td>ENG 101 Freshman Composition</td>
</tr>
<tr>
<td>ENGL 1190 Communications II OR ENGL 1220 Composition II</td>
<td>4 or 3</td>
<td>ENG 201 Intermediate Composition</td>
</tr>
<tr>
<td>SPCH 1060 Speech Communications OR SPCH 2550 Argumentation Debate</td>
<td>3 or 4</td>
<td>COM 101 Intro to Communication OR COM 267 Intro to Debate</td>
</tr>
<tr>
<td>Mathematics Quantitative Reasoning Writing Intensive</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>COM 101 Intro to Communication OR COM 267 Intro to Debate Satisfied by MATH 1760 (see below)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Satisfied by PHYS 2220 (see below)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Six credits waived if MTA or MACRAO is satisfied. The remaining 6 must be completed at CMU</td>
</tr>
</tbody>
</table>

**General Education – University Program Requirements**

All MTA applicable courses require a grade of “C” or higher

**Group I Humanities (6 – 8) from at least 2 subjects**

MACRAO: Requires 8 hours – MTA: Requires 2 courses

Select courses from: ARAB 1260, 1270, 2360; ARTT 1620, 2650, 2660; CHIN 1260, 1270; ENGL 1730, 2410, 2420, 2510, 2520, 2600, 2610, 2640, 2710, 2720, 2730, 2800, 2810, 2850; FREN 1260, 1270, 2360, 2370; GRMN 1260, 1270, 2360; HUMN 1210, 1250, 1270, 1300, 1460, 1472, 1473, 1474, 1476, 1700, 1750, 2000, 2100; INTL 2000, 2300, 2800; ITAL 1260, 1270, 2360, 2370; MUSC 1030, 1050, 1060, 1070, 1160, 1170, 2080, 2180, 2190, 2270, 2270; PHIL 1200, 2120, 2200, 2400; SPAN 1260, 1270, 2360, 2370; MATH 132 Calculus I

**Group II Natural Sciences (4 – 8) from at least 2 subjects**

MACRAO: Requires 8 hours (Math + Natural Science) - MTA: Requires 2 courses

At least one course must be a lab science

CHEM 1170 Principles of Chemistry I

PHYS 2220 Analytical Physics I

**Group III Social Sciences (6 – 8) from at least 2 subjects**

MACRAO: Requires 8 hours – MTA: Requires 2 courses

Select courses from: ANTH 1000, 2220; ECON 1160, 1170, 2110; GEOG 1100, 1500, 2000; HIST 1260, 1270, 1400, 1500, 1600, 1700, 2000, 2100, 2220, 2330, 2340, 2360, 2370, 2375, 2390, 2520, 2520, 2560; INTL 2010, 2500, 2700; POLS 1000, 1101, 1104, 1200, 1500, 1600, 1700, 2000, 2100, 2170, 2210, 2220, 2300, 2310, 2400, 2450, 2500, 2550, 2600, 2700, 2750, 2760; SOCY 1100, 1100, 1200, 2000, 2121, 2450, 2550

**Group IV Studies in Culture and Diversity**

MACRAO: Requires 8 hours (Math + Natural Science) - MTA: Requires 1 course

MAT 1760 Analytic Geometry & Calculus I

**Mathematics (3 – 4):**

MACRAO: Requires 8 hours (Math + Natural Science) - MTA: Requires 1 course

MTH 132 Calculus I

**Major or Degree Related Transferable Courses**

CHEM 1180 Principles of Chemistry II

CHEM 2260 Organic Chemistry I

CHEM 2270 Organic Chemistry Lab

CHEM 2280 Organic Chemistry II

MTH 1770 Analytic Geometry & Calculus II

MATH 2000 Introduction to Linear Algebra

MTH 2760 Analytic Geometry & Calculus III

PHYS 2230 Analytical Physics II

**Credits**

<table>
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<tr>
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<tr>
<td>COM 101 Intro to Communication OR COM 267 Intro to Debate Satisfied by MATH 1760</td>
<td>6 – 8</td>
</tr>
<tr>
<td>Satisfied by PHYS 2220 (see below)</td>
<td></td>
</tr>
<tr>
<td>Six credits waived if MTA or MACRAO is satisfied. The remaining 6 must be completed at CMU</td>
<td></td>
</tr>
<tr>
<td>CHEM 132 General Chemistry II</td>
<td>4</td>
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<tr>
<td>CHEM 345 Organic Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHM 349 Introduction to Organic Chemistry Lab</td>
<td>2</td>
</tr>
<tr>
<td>CHM 346 Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>MTH 133 Calculus II</td>
<td>3</td>
</tr>
<tr>
<td>MTH 223 Linear Algebra and Matrix Theory</td>
<td>3</td>
</tr>
<tr>
<td>MTH 233 Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>PHY 146 University Physics II &amp; 176 University Physics Lab</td>
<td>5</td>
</tr>
</tbody>
</table>

**IMPORTANT NOTES**

- It is strongly recommended that transfer students contact CMU early in their college attendance to ensure proper course sequencing for their major, optimizing course scheduling, and timely degree completion at CMU. CMU College of Science & Engineering 989.774.1870.
- The sequence of math and physics is required for students seeking American Chemical Society certification. For additional requirements in the major and more information please see www.cst.cmich.edu or contact the Chemistry department at 989-774-3981.
- For Chemistry teaching recommendations, see the Secondary Education Transfer Curriculum Guide.
Major or Degree Related Courses to be Completed at CMU

Chemistry Core I (5 – 8 hours)
Select one of the following options:

Option A: CHM 131 satisfied at MCC with CHEM 1170
CHM 132 satisfied at MCC with CHEM 1180

Option B: CHM 161 Principles of Chemistry (5)

Chemistry Core II (27 – 29 hours)
CHM 211QR Quantitative Analysis (4)
CHM 331 Inorganic Chemistry (4)
CHM 345 satisfied at MCC with CHEM 2260
CHM 346 satisfied at MCC with CHEM 2280
CHM 349 satisfied at MCC with CHEM 2270
CHM 351 Physical Chemistry I (3)
CHM 352 Physical Chemistry II (3)
CHM 357 Physical Chemistry Laboratory (2)
CHM 425 Introductory Biochemistry (3)
CHM 491 Undergraduate Research (1 – 3)

Electives (3-8 hours)
Sufficient 500-level advanced courses to meet the minimum credit hour requirement. Select from the following:
CHM 511 Advanced Analytical Chemistry (4)
CHM 513 Chemistry of Natural Waters (3)
CHM 522 Intermediate Biochemistry (3)
CHM 527 Biochemistry Laboratory (1)
CHM 528 Bioanalytical Techniques Laboratory (2)
CHM 531 Advanced Inorganic Chemistry (3)
CHM 547 Advanced Chemistry Laboratory (2)
CHM 551 Materials Chemistry: Inorganics and Nanomaterials (3)
CHM 555 Advanced Physical Chemistry (3)
CHM 561 Polymer Chemistry (3)
CHM 562 Industrial Chemistry (3)
CHM 564 Polymer Technology (3)
CHM 566 Introduction to Biomaterials (3)
CHM 567 Polymer Science Laboratory (2)
CHM 568 Pharmaceutical Chemistry (3)
CHM 571 Topics in Chemistry (1 - 9)
CHM 583 Seminar in Chemistry (1 - 2)

Note:
- Other courses may be substituted only with permission of a chemistry major advisor.
- 11 credit hours must be in laboratory courses. (One credit hour each of CHM 131, 132, 211 and 331, and two credit hours of CHM 161 count as laboratory credit hours). *CHM 521 (3) and CHM 522 (3) may be substituted for CHM 425 (3). Students are urged to consult their major/pre-professional advisor before enrolling for biochemistry courses.

Mathematics and Physics: The following courses are required for students desiring American Chemical Society certification:
MTH 132 satisfied at MCC with MATH 1760
MTH 133 satisfied at MCC with MATH 1770
MTH 223 satisfied at MCC with MATH 2000
MTH 233 satisfied at MCC with MATH 2760
PHY 145QR & 175 satisfied at MCC with PHYS 2220
PHY 146 & 176 satisfied at MCC with PHYS 2230

These MTH and PHY courses are also recommended for students who do not desire ACS certification. The MTH and PHY courses must be completed prior to enrolling in Physical Chemistry.

General Notes
- A grade of C- or better is required for a course to transfer.
- A bachelor’s degree requires a minimum of 124 semester hours of credit. CMU will accept community college transfer credits beyond the recommended 64 semester hours; however students will need to complete a minimum of 60 semester hours from an accredited 4-year-degree granting institution. A minimum of 40 hours must be completed at the 300 level or above. A minimum of 30 semester hours of credit must be earned from CMU.
- The University Program Requirements and competencies may be fulfilled by students who satisfy the MACRAO Agreement or the MTA
- Students are required to meet CMU Competency Requirements prior to reaching 56 credit hours. Competency requirements consist of: two Written English (composition) courses, one Oral English (communication) course, and one Mathematics course be completed with a grade of “C” or above.

Any remaining required and elective courses for a bachelor’s degree will be selected in consultation with an academic advisor to ensure that CMU degree requirements are being met.

Contact Undergraduate Admissions at cmuadmit@cmich.edu for major related course information and or explore http://cmich.edu/transfer, CMU’s Transfer Equivalency Tool and the CMU’s Transfer Simulation Tool.

Effective Bulletin Year: 2017 – 2018

CENTRAL MICHIGAN UNIVERSITY
Admissions: Warriner Hall 102 | Mount Pleasant, MI 48859 | 1-888.292.5366 Toll Free

cmuadmit@cmich.edu | http://admissions.cmich.edu

CMU is an AA/EO institution, providing equal opportunity to all persons, including minorities, females, veterans and individuals with disabilities. (see cmich.edu/aaeo) UComm 9063